Declaration of John S. Yoshida
(December 8, 2005)

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DECLARATION OF JOHN S. YOSHIDA

I, John S. Yoshida, hereby declare as true and correct under penalty of perjury under the laws of the State of California and the United States:

1. I am the Director of the Central Valley Criminalistics Laboratory of the California Department of Justice.

2. I have worked in crime laboratories since 1979, and have been a professional Criminalist employed by the California Department of Justice since 1982.

3. I have a bachelor's degree in Biological Science from the University of California, Davis. I have also attended hundreds of hours of continuing professional education in forensic science, including training in advanced, forensic and scanning electron microscopy; forensic photography; and firearm/toolmark identification procedures. I am a member in good standing of the California Association of Criminalists.

4. I have been a professional firearm/toolmark examiner for over 20 years. I have performed over 200 firearm/toolmark analyses during my career. I have also inspected firearm/toolmark examiners in several crime laboratories as an ASCLD/LAB inspector.

5. I have testified as an expert witness on thousands of occasions. I

have been recognized as an expert witness by Federal District Courts in San Francisco, Sacramento, Las Vegas, Nevada, and Jacksonville, Florida; California Superior and Justice Courts in Alameda, Auburn, Benicia, Butte, Calaveras, Marin, Merced, Napa, Sacramento, San Andreas, San Joaquin, Santa Cruz, Solano, Sonoma, Stanislaus, and Tuolumne Counties; and California Municipal Courts in Fairfield, Lodi, Los Banos, Manteca, Martinez, Merced, Modesto, Napa, Oakland, Pittsburg, Sacramento, San Francisco, San Rafael, Santa Cruz, Sonora, Stockton, Tracy, Turlock and Vallejo.

6. I have testified on over 100 occasions specifically as an expert in firearm/toolmark identification.

7. I have reviewed the October 26, 2005, declaration and curriculum vitae of David Lamagna and the attached exhibits; the trial testimony of Los Angeles Sheriff's Department Scientific Services Bureau Sergeant James Warner in the case of *People v. Stanley Williams*, Los Angeles County Superior Court number A194636; and Sergeant Warner's reports regarding the toolmark examinations about which he testified in that case.

8. Based upon my review of Mr. Lamagna's curriculum vitae, he is does not appear qualified to give an expert opinion regarding toolmark evidence. His formal training in toolmark examination is slight, there is no indication he has any

practical experience in toolmark examinations. His lone publication regarding toolmark examination, "*Daubert Challenges to Forensic Evidence: Ballistics Next on The Firing Line*," printed in the criminal defense magazine **The Champion** in 2002, condemns the entire practice of forensic toolmark identification.

9. Mr. Lamagna's criticisms of Sergeant Warner's conclusion are flawed. These flaws flow from inaccuracies in Mr. Lamagna's characterization of Sergeant Warner's testimony, and Mr. Lamagna's lack of familiarity with the standard practices in the firearm/toolmark analysis community.

10. Mr. Lamagna asserts that Sergeant Warner's conclusions are based upon "confirmation bias." Confirmation bias can be a valid concern; however, Sergeant Warner's testimony clearly states that his initial opinion of probable identification was based on a lack of detail reproduced in the test-fired shotgun shells. He found that the general characteristics were the same, and that there were some matching individual characteristics, but not enough for a positive identification. Additional test fires were performed and compared. Two of the additional test fires reproduced sufficient detail for Sergeant Warner to make a conclusion of identification. Sergeant Warner also explained the reason for the variation of microscopic detail in the test fires. The additional data collected with the additional test fires caused Sergeant Warner to re-evaluate his opinion of the comparison to the

evidence shotgun. Science frequently incorporates new data to evaluate and test old theories. Sergeant Warner formed a conclusion on a set of data and then re-evaluated this opinion when a new set of data was introduced. There is nothing unscientific about the process.

11. Mr. Lamagna criticizes Sergeant Warner for his purported failure to examine the expended shell casings for ejector and extractor marks. It is possible these marks were not present on the evidence shotgun shell, or that if they were present, they were unrevealing. Sergeant Warner did testify that the evidence shotgun shell has consistent general (class) characteristics. In any event, the identification was positively established with correspondence of detail on two separate tool surfaces within the shotgun (breech face and firing pin).

12. Mr. Lamagna criticizes Sergeant Warner for failing to "identify the markings on the spent shotgun shells by class, subclass, and individual characteristics." However, the individual nature of the marks used on the breech face and firing pin impressions was implied in Sergeant Warner's testimony. Further, in 1979 it was not common to identify subclass characteristics, although a few documented instances of subclass characteristics in barrels (which would not be applicable to this examination, which involved a shotgun shell, not a projectile) had been published. Subclass carryover of microscopic detail in breech face and firing

pin impressions is not common in currently manufactured firearms, and was less common in firearms made in 1979. As noted, the type and location of the toolmarks upon which Sergeant Warner's based his comparison were identified (breech face and firing pin). Documentation of the dimensions of microscopic detail is not common practice, and does not reduce the scientific validity of toolmark comparisons.

13. Standard practice in the firearm toolmark identification community does not require photomicrographs be taken or a second firearm/toolmark examiner to validate an identification in order to render a valid opinion. Further, photomicrographs are often unrevealing of the subtle markings used to determine whether a particular weapon is or may be the source of particular toolmarks. These practices were even less frequent in 1979.

Executed under penalty of perjury of the laws of the State of California and the United States, this 8th day of December, 2005, at Ripon, California.

John S. Yoshida
CA DOJ Central Valley Laboratory Director

Declaration of Ruben A. Flores
(December 9, 2005)

SER 328 - 330

DECLARATION OF RUBEN A. FLORES

I, Ruben A. Flores, hereby declare as true and correct under penalty of perjury under the laws of the State of California and the United States:

1. I am a Supervising Criminalist with the Los Angeles County Sheriff's Department Scientific Services Bureau.

2. I have an Associate of Arts degree in Chemistry from East Los Angeles College, a Bachelor of Science degree in Chemistry from the University of California, Los Angeles, and a Master of Science degree in Criminalistics from California State University, Los Angeles. I have attended hundreds of hours of continuing professional education, including training in force and weaponry by the Rio Hondo and Los Angeles Police Academies; multiple classes in armorer's training, including training from Smith and Wesson, Glock, and Beretta; firearm and toolmark training from the California Department of Justice; and, as recently as earlier this year, a course in forensic shooting scene reconstruction. I am also currently an instructor in crime scene investigation at Rio Hondo College and California State University, Long Beach.

3. I have been a professional chemist since 1978, and have worked as a forensic criminalist since 1982. I have performed over 1000 firearm analyses in my career. I have testified in court as an expert in firearm analysis on between 150 and

300 occasions, beginning in 1987 and continuing through the present.

4. I have reviewed the transcript of testimony of Los Angeles Sheriff's Sergeant James Warner in the case of *People v. Stanley Williams*, Los Angeles County Superior Court number A194636; the declaration of curriculum vitae of David J. Lamagna discussing that testimony; the autopsy reports of Yee-Chen Lin, Tsai-Shai Yang, and Yen-Yi Yang; and thirteen photographs of court exhibits.

5. In paragraph 18 of his declaration, Mr. Lamagna indicates that, based upon his conclusion that there were only three buckshot pellets found in Mrs. Yang's abdomen, the wound was more consistent with having been inflicted by a round fired from a .410-bore shotgun than from a round fired from the 12-gauge shotgun which inflicted the rest of the wounds to Mr. and Mrs. Yang and their daughter.

6. This assertion was contrary to my understanding that .410-bore buckshot ammunition was not commercially available back in 1979, although it is available today. I, along with several colleagues under my direct supervision, have investigated the availability of such ammunition. We have contacted several manufacturers of shotgun shells, and conferred amongst ourselves and with other

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colleagues. This investigation confirmed my original understanding that such ammunition was not commercially available in 1979.

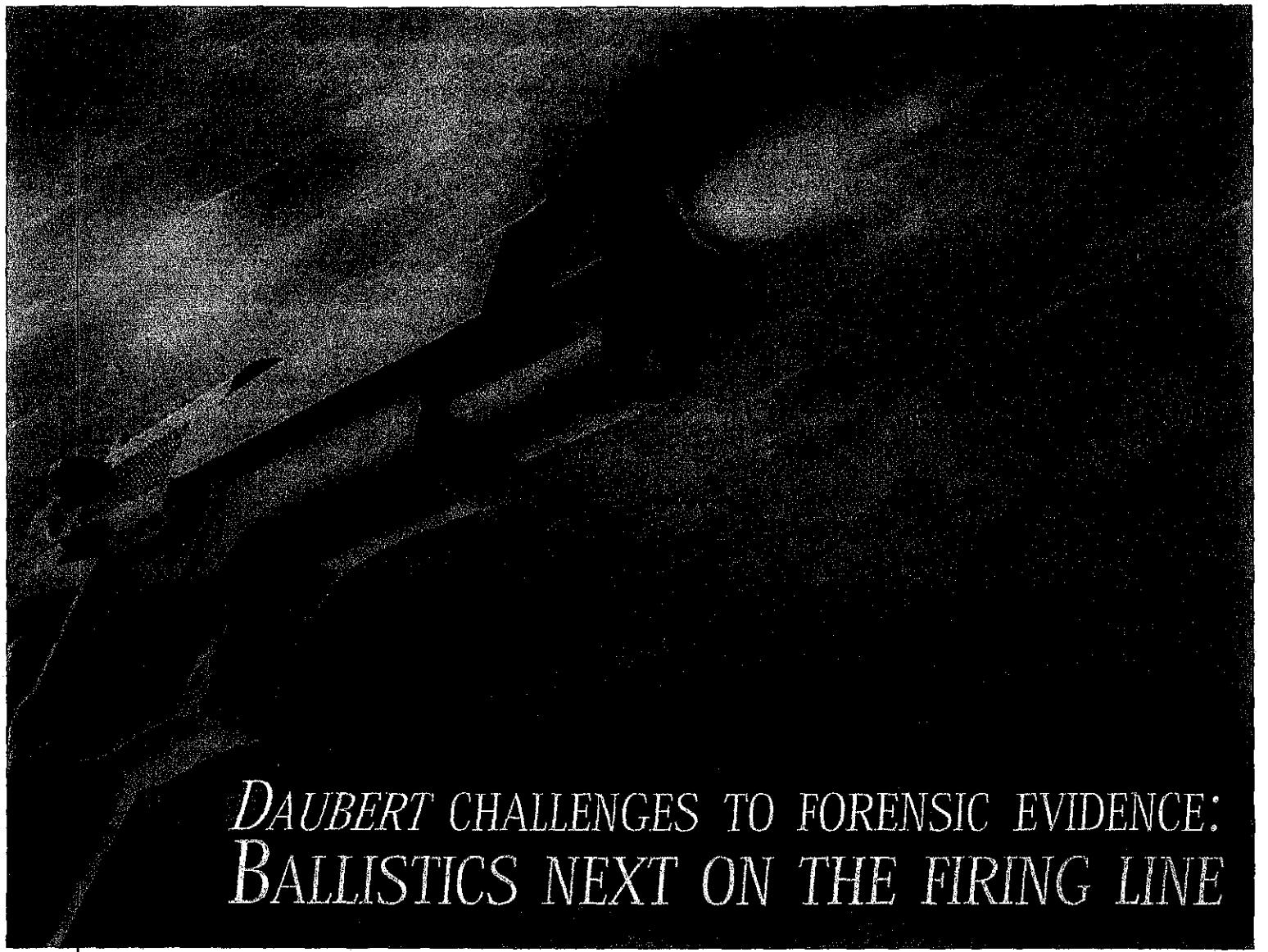
Executed under penalty of perjury under the laws of the State of California and the United States, this 9th day of December, 2005, at Los Angeles, California.

Ruben A. Flores

TOTAL P.004

Joan Griffin and David LaMagna,
Daubert Challenges to Forensic Evidence: Ballistics Next on the Firing Line,
The Champion (Sept/Oct 2002)

SER 331 - 339



Daubert challenges to forensic evidence: Ballistics next on the firing line

By Joan Griffin and David J. LaMagna

A revolution is taking place in the courtroom as long accepted forensic methods are challenged under the *Daubert/Kumho Tire* standard of scientific reliability. Courts have excluded expert testimony regarding handwriting analysis, field sobriety tests, hair, bite mark and voice identification. In a much publicized decision from the Eastern District of Pennsylvania, the court initially excluded and then admitted upon reconsideration expert testimony on fingerprint analysis. But even that decision represented a sea change in judicial treatment of this most venerable of forensic techniques. The court admitted the evidence only after the government offered substantial expert testimony regarding the methodology of the technique and the certification and testing of its practitioners. No longer is it simply assumed that generally accepted forensic methods are in fact reliable.

Ballistics evidence, or most specifically "toolmark analysis," the comparison of markings imparted to ammunition by firearms, will be next, and for good reason. Unlike DNA or fingerprints, markings left by an individual gun on ammunition fired through it are neither unique nor permanent. In fact, permanence has never been assumed, since markings left by a gun may change over time with normal wear and tear. The uniqueness of certain markings, on the other hand, has been the fundamental principle upon which toolmark analysis has been based. But with the advent of modern manufacturing methods, in which parts are molded or cast rather than milled and which use little or no handwork, uniqueness can no longer be presumed. Without that milling or handwork, there are no "toolmarks" which might have caused a gun to leave "unique" signs on bullets fired through them.

Although there has yet to be a published decision of the federal district court excluding classic firearm identification testimony from evidence, the challenge has begun. In *United States v. Prochilo*, a jury acquitted Michael Prochilo of a charge of felon in possession of a firearm arising out of an alleged attempted shooting of a police officer during a car theft. Four years earlier, Prochilo had been tried and convicted of the same charge in United States District Court in Boston. In the first trial, the government offered in its case in chief "expert" testimony that a spent cartridge casing discovered the day after the theft had indeed been fired from a Raven .25

semiautomatic pistol that had also been found the day after the theft, lying in the grass in Prochilo's flight path. Prochilo was sentenced to 27 and a half years in prison, the highest sentence allowed under the guidelines. The case was later overturned on appeal for procedural error and remanded for retrial.

Between the first and second trials, the Supreme Court decided *Kumho Tire*, making clear that the *Daubert* standard of admissibility applied to technical as well as scientific evidence. At the second trial, the defendant made a motion *in limine* under *Daubert* to exclude the classic firearms identification evidence. The court granted a *Daubert* hearing at which the defendant challenged both the fundamental assumption of toolmark analysis, that each gun leaves unique marks on any cartridge cycled through it, and the method of comparison employed by the examiner pursuant to which he declared a "match."

After hearing, the court allowed the testimony. The defendant then took his evidentiary challenge to the jury, again disputing both the theory of toolmark identification and the examiner's declaration of a "match." After four days of deliberations, the jury acquitted. In an interview with a local newspaper, one juror stated that, despite the government's expert testimony, they simply did not believe the ballistics evidence. It is only a matter of time before the courts catch up with the *Prochilo* jury.

Daubert/Kumho Tire

Beginning with the Supreme Court's decision in *Daubert v. Merrill Dow Pharmaceuticals*[1] and culminating in recent amendments to Federal Rule of Evidence 702, the standard of admissibility of expert testimony has moved away from the subjective general acceptance rule set forth in *Frye v. United States*[2] toward a more objective standard based on verified scientific method. The court in *Daubert* held that "faced with a proffer of expert scientific testimony, . . . the trial judge must determine at the outset, pursuant to rule 104(a), whether the expert is proposing to testify to 1) scientific knowledge that 2) will assist the trier of fact to understand or determine a fact in issue."[3] The district court in its "gate keeping" role must determine, first, "whether the reasoning or methodology underlying the testimony is scientifically valid," and second, "whether that reasoning or methodology properly can be applied to the facts in issue."[4] These two requirements have been termed "reliability" and "fit."

Following the decision in *Daubert*, there was disagreement as to whether this new standard of admissibility applied to all expert testimony or only to scientific expert testimony. In *Kumho Tire Co. v. Carmichael*,[5] the court answered the question in the affirmative, holding that *Daubert* applies to all expert testimony regardless of whether the expert testifies or purports to testify on the basis of scientific, technical or other specialized knowledge or whether a witness purports to be qualified by knowledge, skill, experience, training or education.

On April 17, 2000, Rule 702 of the Federal Rules of Evidence was amended to reflect the Court's ruling in *Daubert*. Rule 702 now reads:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

A. Reliability

In determining the reliability of the proffered expert testimony, the focus is on the principles and methodology, not on the conclusions they generate.[6] The court must ensure "that in each step, from initial premise to ultimate conclusion, the expert faithfully showed a valid scientific methodology."[7]

In *Daubert*, the court identified five factors that could be considered by the trial court in determining whether the proffered expert testimony was sufficiently reliable to be put before the jury. The factors listed in *Daubert* include: (1) whether a theory or technique can be and has been tested, (2) whether the theory or technique has been subject to peer review and publication, (3) whether a particular scientific technique has a known or potential rate of error, (4) whether standards controlling the technique's operation exist and are maintained, and (5) whether the technique or theory is generally accepted in the relevant scientific community.[8] In *Kumho*, the court emphasized that the inquiry is a flexible one and that this list of factors is not definitive. Each *Daubert* factor will not be relevant in every case. For example, the presence of *Daubert's* general acceptance factor will not "help show that an expert's testimony is reliable where the discipline itself lacks reliability . . . ."[9]

B. Relevance

"Rule 702's 'helpfulness' standard requires a valid scientific connection to the pertinent inquiry as a pre-condition to admissibility."[10] "In elucidating the 'fit' requirement, the Supreme Court noted that scientific expert testimony carries special dangers to the fact-finding process because it 'can be both powerful and quite misleading because of the difficulty in evaluating it.'"[11] "Federal judges must therefore exclude proffered scientific evidence under Rules 702 and 403 unless they are convinced that it speaks clearly and directly to an issue in dispute in the case and that it will not mislead the jury."[12] The purpose of the reliability and fit requirements is "to ensure that junk science is kept out of the federal courtroom."[13]

Admissibility of other forensic expert testimony

Following the court's ruling in *Daubert*, defendants have challenged the admissibility of a variety of expert forensic evidence, including handwriting analysis, latent fingerprint analysis, field sobriety tests, voice identification, hair comparison, and bite mark comparison. "[I]n each area little rigorous systematic research has been done to validate the discipline's basic premises and technique, and in each area there is no evident reason why such research would be infeasible. In many of these areas, some courts may demand more by way of validation than the disciplines can presently offer."[14]

A. Handwriting analysis

Numerous courts have now limited the scope of expert testimony in the area of handwriting analysis; although the expert may still describe points of comparison between two samples of handwriting, courts have refused to allow the expert to testify as to the ultimate authorship of the handwriting sample in question.

In *United States v. Hines*, Judge Gertner excluded the testimony of an FBI document examiner as to the authorship of a "stick-up" note found at the scene of a crime.[15] The court found that the expert's testimony met virtually none of *Daubert's* standards for reliabili-

ty. "There are no meaningful and accepted validity studies in the field. . . . This is a 'field' that has little efficacy outside of a courtroom. There are no peer reviews of it."[16] The court noted that it had been presented with no information regarding the examiner's error rate, the times she has been right versus the times she has been wrong, nor could anyone compare the opinion reached by the examiner with a standard protocol subject to validity testing since there were no recognized standards. There was no agreement as to how many similarities it takes to declare a "match" or how many differences it takes to rule one out.[17]

The court compared the proffered testimony to "one-on-one show-ups," a form of eyewitness identification disfavored as unduly suggestive. The court noted that there was no evidence that the handwriting expert could have selected the defendant's handwriting as most similar to the robbery note out of a line-up of similar handwriting exemples. Hence, the testimony was inherently unreliable.

The court did permit the expert to testify as to the particular points of comparison between the robbery note and the defendant's handwriting on the ground that both lay witnesses and jurors would be permitted, based on their own experience, to make comparisons between the handwriting at issue. "The ability of the jury to perform its own visual comparison cut against any danger of undue prejudice" in permitting the expert to point out points of comparison without testifying that there was a "match."[18] District courts in Nebraska and New Jersey have similarly rejected handwriting and text analysis testimony, respectively, for failure to meet *Daubert's* validity and reliability requirements.[19]

B. Latent fingerprints

This year, in *United States v. Plaza*, Judge Pollak of the Eastern District of Pennsylvania first excluded fingerprint analysis testimony proffered by the government on the ground that it failed to meet *Daubert's* standard of reliability and then, upon reconsideration, reversed that decision.[20] In his initial decision, Judge Pollak, following Judge Gertner's reasoning in *Hines*, ruled that the method of comparison used by the "experts" did not meet *Daubert's* reliability standards, rejecting, for example, the government's assertion that the technique had been "tested" in court for over 100 years.[21] Judge Pollak reversed his decision only after the government came forward with extensive expert testimony regarding the history and technique of fingerprint analysis, the training, certification and annual testing of FBI certified experts, and the common standard used around the world in analyzing subject fingerprints.

The court premised its decision to admit the evidence on its finding that the technique of fingerprint analysis, while not itself a science, is "rooted in science" – specifically the scientific fact "that fingerprints are unique and permanent," of which the court took judicial notice.[22] The court noted the rigorous requirements for FBI certified examiners, including two years of in-house training and a 3-day certification exam. The government presented expert evidence of annual proficiency testing given to all certified FBI examiners with a resulting 1 percent error rate over a 7-year period. The court found, based on expert testimony proffered by the defendant, that the proficiency tests were less demanding than they should be, but noted that the defense had offered no evidence that FBI certified examiners were not competent as a group and had presented no exemplars of erroneous identifications by FBI-certified examiners.

Although the court found the testing inadequate, it was not persuaded that there was sufficient danger of error to justify exclusion of the evidence until proper verification could be completed. The court ruled it would not make "the best the enemy of the good".[23] The court may well have reached a different conclusion had the defendant offered any evidence of failure of the technique. In short, Judge Pollak "changed his mind," but not before requiring the government to proffer substantial evidence of the reliability and efficacy of the expert testimony offered, evidence that the government had not before been called upon to produce. Prior to Judge Pollak's decision in *Plaza*, district courts in Indiana and Puerto Rico had admitted fingerprint identification evidence over defendants' objections.[24]

C. Field sobriety tests

Similarly, the District Court of Maryland has taken a hard look at long accepted field sobriety tests and determined that they are not admissible as direct evidence of intoxication or impairment. In *United States v. Horn*,[25] Judge Grimm recognized that under *Frye's* general acceptance standard, and with the impact of *stare decisis*, it was all too easy for a body of case law to develop "stating that a methodology had achieved general acceptance without there ever having been a contested, detailed examination of the underpinnings of that methodology."[26] The court found that this was indeed the case with respect to field sobriety tests.

The district court found that there were no validation studies sufficient to establish the reliability of field sobriety tests to establish specific blood alcohol content. The court also found that "[h]owever skilled law enforcement officials, highway safety specialists, prosecutors, and criminologists may be in their fields, the record before me provides scant comfort that these communities have the expertise needed to evaluate the methods and procedures underlying human performance tests such as the SFSTs [Standard Field Sobriety Tests]."[27] Thus the court excluded proffered expert testimony that a defendant had "passed" or "failed" a specific field sobriety test or the number of "standardized clues" the suspect had missed.[28]

The court did allow officers to testify to their general observations of a suspect performing the field sobriety tests because they constitute the kinds of visual clues that lay persons using ordinary experience associate with reaching opinions about whether someone has been drinking. Similarly, an officer would be permitted to give an opinion as to whether a suspect was intoxicated as long as the officer did not purport to base that opinion on scientific, technical or specialized information. In this, the officer is no different than a lay witness who would similarly be permitted to give an opinion of intoxication based on common observation and experience.

D. Hair comparison/voice identification/bite-mark analysis

Expert testimony concerning hair comparison, voice identification and bite-mark comparisons have all been subject to the same criticism. In *Williamson v. Reynolds*, the court could not find that the expert hair comparison testimony met any of the requirements of *Daubert* and observed that "although the hair expert may have followed procedures accepted in the community of hair experts, the human hair comparison results in this case were nonetheless scientifically unreliable."[29] The district court decision was subsequently reversed on other grounds,[30] but the defendant was later exonerated by exculpatory DNA evidence, *i.e.*, the hair match was not a match.

A 1996 Department of Justice report discussing the exoneration of 28 convicts through the use of DNA technology showed that, in several of these prosecutions, hair analysis was used to obtain the conviction. In one case, the expert had testified that the crime scene hair sample "was unlikely to match anyone other than the defendant," but DNA evidence proved otherwise.[31]

Of course, what's good for the goose is good for the gander. In *United States v. Bahena*, defendants argued on appeal that, among other things, the court had erred in excluding expert testimony regarding voice spectrography.[32] In excluding the testimony, the district court noted that the defendant's expert had had no formal training, was not a member of any professional organization in the field, and was not familiar with the voice-comparison standards accepted in the field.[33]

Finally, in *Howard v. State*, the Mississippi Supreme Court reversed a decision of the lower court admitting expert testimony of bite-mark comparison, noting that numerous scholarly authorities had criticized the technique and that there was little consensus in the scientific community on the number of points that must match before any positive identification could be claimed.[34]

Mounting a *Daubert* challenge to ballistics evidence

A. Procedural Requirements – the motion in limine and Daubert hearing

As a practical matter, expert testimony is typically challenged by way of a motion *in limine* prior to trial. The court then may, but is not required to, hold a pretrial evidentiary hearing, a so-called *Daubert* hearing, to determine the admissibility of the evidence. The procedures to be employed to test an expert's reliability are within the court's discretion.[35] The burden is on the proponent of expert testimony to establish a *prima facie* case that the evidence satisfies the requirements of F.R.E. 702.[36] For such a showing to be sufficient, the experts must explain the methodology they used to reach their conclusions and point to external sources to validate that methodology.[37] Where the court is presented with "only the experts' qualifications, their conclusions and their assurances of reliability. . . . [u]nder *Daubert* that is not enough."[38]

If the proponent of the expert testimony makes a *prima facie* showing that the testimony meets the requirements of Rule 702, the opposing party is then entitled to challenge that showing. Only where the opposing party raises a material dispute as to the admissibility of expert scientific evidence, will the district court then hold a *Daubert* hearing to consider the conflicting evidence and make findings about the soundness and reliability of the methodology employed by the scientific experts.[39]

In *Prochilo*, the defendant filed a motion *in limine* arguing first that the government had failed to make out even a *prima facie* showing that the proffered evidence met the requirements of Rule 702. The defendant argued that, because the government had failed to meet its *prima facie* burden, he had no obligation to present evidence that the government's expert employed unsound methodology or failed assiduously to follow an otherwise sound protocol. The government had provided nothing more than the officer's bald assertion that the ammunition subsequently delivered to the police "matched" ammunition resulting from a test firing/cycling of the Raven .25 found the morning after the defendant's arrest. The report neither explained the expert's methodology, nor pointed to any external source to validate that methodology. The court was presented solely with the expert's qualifications, conclusions, and assertions of reliability, which the defendant argued, under *Daubert*, were not enough.

That argument did not carry the day, nor was it likely to no matter how technically or legally correct. As a practical matter, there is a presumption that venerable forensic techniques such as ballistics are sufficiently reliable to allow their practitioners' testimony to be admitted into evidence. Accordingly, the burden often shifts to the defendant to come forward with evidence challenging that assumption – typically, expert testimony, such as that presented by defendants regarding handwriting and fingerprint analysis in *Hines* and *Plaza*, respectively. The *Plaza* decisions first excluding and then admitting expert fingerprint analysis only after the government was put to the burden of establishing the reliability of the technique may well represent erosion of that presumption. Still, at least initially, courts are likely to require some showing from the defendant challenging the reliability of generally accepted forensics techniques.

Therefore, in addition to asserting that the government had failed to make out a *prima facie* case, the defendant in *Prochilo* filed an affidavit of his own expert, who was both a forensic examiner trained in traditional firearms examination techniques and an educated scientist with degrees in materials science and engineering. The expert affidavit described traditional toolmark analysis, the effects of modern manufacturing methods on the efficacy of toolmark analysis techniques and the lack of scientific method employed by traditional examiners.

The defendant also attached to the affidavit a bulletin from the Georgia State Forensics Lab reporting that they had been unable to determine which officer's Glock service weapon had shot a bullet into an innocent bystander. That single piece of anecdotal evidence, contradicting the fundamental assumption of the government's expert testimony that all guns leave unique discernable marks on bullets fired through them, may well have played a crucial role in the court's decision to grant an evidentiary hearing. Indeed, in *Plaza*, Judge Pollak cited the lack of such evidence in his decision to admit expert testimony by FBI certified fingerprint examiners.

At the *Daubert* hearing, the government called a firearms expert from the Bureau of Alcohol, Tobacco and Firearms who had not reviewed the evidence and had no opinion as to whether there was a "match," but who testified generally as to the methods and reliability of toolmark analysis. The government's expert testified without citation to authority that it was a fundamental principle of toolmark analysis that all firearms left unique marks on bullets fired through them and that the reliability of this technique was established by its use and admission into court for over 100 years. At the close of the government's presentation, the defendant moved for a ruling that the government had failed to establish the soundness and reliability of the testimony offered, but the motion was denied. The defendant then called to the stand the expert who had been identified by the government to testify at trial and who had conducted the examination of the evidence in the case. Through his testimony, the defendant was able to establish that, even under the standards of traditional toolmark analysis, the government's evidence did not support the conclusion of a "match."

The defendant then called his own expert to testify generally about the efficacy of toolmark analysis techniques. What follows is the summary of the testimony and arguments asserted in the motion *in limine* and supporting memoranda and affidavits, at the *Daubert* hear-

ing itself, and finally at the trial on the merits before the jury.

B. Toolmark analysis – what is it?

There is little dispute regarding the general principles of toolmark analysis, which are, by and large, set forth in Colonel Hatcher's classic textbook from 1935.[40] This information was included in the defendant's expert affidavit in support of the motion *in limine*. Prochilo was also able to establish all of these general principles through the government's experts on cross-examination both at the *Daubert* hearing and at trial.

Expert opinion that a particular gun has fired a particular round of ammunition is known as "toolmark identification." "Toolmarks" refer to the processes by which firearms have been traditionally manufactured at machining centers using rough castings, forgings or sheet metal stampings which were then finished by hand-filing and fitting of the individual part into the individual firearm.

When a firearm is fired, it may leave on the bullet and cartridge case certain marks that firearms examiners have historically divided into three categories. Under traditional toolmark identification theory, first and most commonly, are "class characteristics," marks that all firearms of a given type will leave. Automatic pistols, such as the Raven .25, may leave extractor or ejector marks or both on the cartridge case which may be used to identify the make of the firearm from which the cartridge was fired, *i.e.*, a Raven as opposed to a Smith & Wesson or a Colt, but cannot identify the individual firearm from which the cartridge was fired.[41]

Into the second category fall what are known as individual characteristics of the firearm. If a particular firearm has a broken firing pin nose, it will leave a certain mark on the primer that perhaps no other firearm would leave.

The third category of markings is known as accidental characteristics. These are marks that can be left by an individual firearm on particular shots but may or may not be reproduced on other shots. These marks are of no help in attempting to identify either the make of firearm from which a cartridge was shot or the particular firearm at issue.[42]

The most important marks in the second category used to make an individual identification of the firearm are, first, the grooves on the surface of the bullet left by rifling marks on the barrel and, second, ridges and grooves impressed into the soft metal of the primer on the head of the cartridge case. Historically, the latter ridges and grooves were relatively irregular because the breech face, into which the cartridge case and, therefore, the primer would collide after the shot was fired, was finished in the manufacturing process by hand filing and fitting of parts. That hand-done tool work was, therefore, somewhat unique to each part created. Even then, identification of the firearm used was difficult because there is great variation in the degree to which different cartridges will take impression of breech-face marks.[43] All of these principles, indeed, anything in Hatcher's book, will be readily admitted by the government's expert.

C. The effect of modern manufacturing methods

Prochilo used his own expert, both by way of affidavit in support of the motion *in limine* and on direct examination at the *Daubert* hearing, to educate the court about modern manufacturing methods and their effect on the efficacy of traditional toolmark identification techniques. Modern manufacturing methods have greatly affected the examiner's ability to identify a particular gun by the marks it leaves on ammunition fired or cycled through it. This is because now there is far less hand tool work, hand-filing and fitting in the manufacture of firearms, and it was that handwork which left individual markings on firearms that might be transferred to ammunition fired or cycled through it.

From design to manufacture to assembly, computerized machinery produces completely or nearly finished parts requiring less hand-finishing. The majority of firearms now are manufactured by metal injection molding, die-casting, investment casting or automated sheet metal stamping, processes which require no hand finishing. While there is still some variation due to manufacturing and individual wear patterns, variation due to manufacturing methods has been and continues to be minimized by modern manufacturing processes. Implementation of statistical process control and statistical quality control further reduces variation. New materials also result in parts that wear less quickly creating fewer individual wear patterns.

Modern manufacturing processes have affected forensic identification apart from ballistics or firearms identification. In the area of questioned documents, for example, examiners now find it much more difficult to identify the electric typewriter that produced a document. The "daisy wheel," which the hammer strikes to make the image on the page, is made by injection molding and therefore has fewer individually identifiable characteristics which can be used to identify the particular typewriter that created the image.

Cheap, readily available guns, such as the Raven .25, the firearm at issue in *Prochilo*, have very little handwork, which is why they are so inexpensive. The major components of the these firearms are not composed of machined parts (except for the breech block insert in the Raven's slide) as are the firearms manufactured using traditional methods. Rather, they are made by die-casting, a method in which molten metal is injected into a die (mold) under pressure at high velocity. Because the parts are neither tool-machined nor hand-filed and fitted, there are fewer, if any, individual characteristics, which are useful in a ballistics comparison of each component of the firearm. Manufacturing defects and/or die (mold) wear, may produce variations, but these are minimized by modern manufacturing methods and quality control procedures.

In a 1998 interview with "Frontline," PBS/WGBH, B.L. Jennings, founder of B.L. Jennings Firearms and Bryco Arms and whose father manufactured Raven .25 handguns, explained the different manufacturing methods:

> [C]olt and Smith & Wesson has [sic] an older philosophy than ours. And theirs is to manufacture the firearm and then finish it independently one by one using filing and fitting. When we design a part, we design it so the part is universal between all of the firearms that are identical to it. So if we make 500 firing pins, it will fit in 500 firearms, and they are totally interchangeable between each other.

Where parts are made to be fully interchangeable, there will be variations in fit when a tight part is put into a loose firearm or vice versa. This, in turn, will lead to variation in markings, if any, which may be left on a cartridge that is fired through a firearm. Thus, where a firearm is made of fully interchangeable parts, there will be more variation on marks left on cartridges fired from an individual firearm, and thus fewer distinct differences between shots fired from different firearms of the same make.[44] The variation in fit caused by fully interchangeable parts leads to more marks that would be put into the "accidental" category, which are of no use in identify-

ing the make of firearm, much less the particular firearm used to fire a cartridge.

D. Does the testimony meet traditional standards?

Before even beginning to challenge the assumptions and methods of toolmark analysis in general, the defendant should scrutinize the examiner's methodology and conclusions to determine whether they meet even the traditional standards historically applied. Specifically, has the expert relied upon markings traditionally considered individual characteristics of the gun in reaching the conclusion that a particular gun fired a particular bullet, and has the expert presented the kind of evidence in support of his conclusions that could be expected under traditional methods?

In *Prochilo*, the defendant argued that the proffered evidence was insufficient even under traditional standards because the government had provided no information as to which type of markings on the cartridge casing the officer had used to determine there was a "match." There was no indication as to whether the officer was looking at marks that would be considered class characteristics, marks which all guns of a given type will leave, as opposed to individual characteristics which could possibly be used to identify the specific weapon that fired the shot. In fact, at the *Daubert* hearing, the government's expert testified that two of the three markings on which he based his conclusion of a "match" were magazine lip or ejector-extractor marks, which he acknowledged, under traditional theory as set forth in Hatcher's text, could be used to identify only the type of gun from which the bullet had been fired, not the particular gun of a given make.

The expert also confirmed that he had taken no photographs of the supposedly identical markings when he made his examination using the comparison microscope. Side-by-side photographs are traditionally used to illustrate the identical markings. Indeed, Hatcher's text reproduced photographs used in the 1921 trial of Sacco and Venzetti that clearly showed the concentric circles of the toolmarks left by the breech face of the gun on the cartridge casing. The expert's testimony that it was not possible to take photographs that accurately reflected what he could observe under the microscope was simply unbelievable and did not meet even the standard of traditional toolmark analysis testimony.

Although no photographs had been provided to the defendant in discovery, in fact, the expert had taken photographs the night before the *Daubert* hearing, which were produced at the hearing. The photographs were devoid of any circular toolmarks on which to base the "match." Thus, the defendant argued that even under traditional theories of toolmark analysis, the expert's evidence was deficient and should be excluded from evidence. Although the motion was denied, the defendant presented the very same evidence to the jury, including displaying the photographs that had been produced at the *Daubert* hearing as contrasted to those used at the trial of Sacco and Venzetti reproduced in Hatcher's text. The inadequacy of the expert's testimony was apparent.

E. Challenging the basic assumptions – uniqueness and permanence

Even if the expert's testimony comports with traditional principles of toolmark analysis, the general theory and techniques are subject to challenge, beginning with the underlying assumptions of uniqueness and permanence. In *Plaza*, Judge Pollak took judicial notice of the uniqueness and permanence of fingerprints. In *Hines*, on the other hand, Judge Gertner noted that, unlike DNA or fingerprints, handwriting is not necessarily unique or permanent.

Even under traditional principles of firearms identification, certain markings such as ejector/extractor marks or magazine lip marks were considered merely "class characteristics." They were used to identify the make or the model of the firearm used or, more likely, to exclude makes of firearms which could not have been used. These marks were not typically used to identify the individual firearm through which a cartridge was fired.[45] Permanence has never been assumed. On the contrary, traditional firearms examiners acknowledge that firearms are subject to wear, which causes the marks they may imprint on a bullet or cartridge casing to change over time.

More importantly, particularly given modern manufacturing methods, there is simply no basis for the assumption, fundamental to classic toolmark identification theory and technique, that those markings previously classed as individual characteristics, specifically barrel rifling and breech face marks, are in fact unique to a particular gun. The defendant established both on cross-examination of the government's expert and through his own expert witness that there have been no independent studies conducted to determine whether in fact each gun creates a unique "fingerprint" on any bullet fired. On the contrary, with modern manufacturing methods, there are minimal, if any, toolmarks to be imparted by the finished firearm on the bullet or cartridge casing that are unique to the particular gun.

Moreover, in the case of toolmark analysis, the defendant can provide specific exemplars of failure of the technique, the kinds of examples that the court in *Plaza* noted were lacking with respect to fingerprint analysis. In *Prochilo*, the defendant was able to provide the court with an example in which government forensic scientists admitted being unable to identify the particular gun that had discharged a bullet using the traditional individual characteristic of barrel rifling. In that case, the firearm section manager of the Georgia Bureau of Investigation Crime Laboratory posted a request on the Internet seeking the assistance of other firearms examiners after he encountered a problem in attempting to identify a particular Glock firearm from which a bullet had been fired.

The problem had arisen in an incident in which an officer had shot an innocent bystander. Officers from two agencies were involved. All of the officers were using Glock service firearms, and the lab could not determine from which service firearm the bullet had been fired. Indeed, as early as 1957, in that year's edition of his text, Hatcher noted that modern methods of manufacturing, such as double button rifling, resulted in highly polished barrels and rifling that provided "the toughest identification job we have ever tackled."[46] In fact Hatcher noted that, "[t]he breech faces that give the most trouble are those of cheap shotguns which are manufactured in enormous quantities from soft steel by standard cutters without any hand finishing at all."[47]

At the *Daubert* hearing in *Prochilo*, the government's expert acknowledged the difficulty of identifying bullets shot through Glock firearms. In fact, the Glock barrel is manufactured using a method that leaves a particularly smooth interior surface that in turn leaves minimal markings on bullets fired through them. Thus, a court faced with a *Daubert* motion concerning toolmark identification evidence cannot, as Judge Pollak did in the *Plaza* case with respect to fingerprints, simply take judicial notice of the uniqueness and permanence of toolmarks on firearms which might be used to identify a cartridge or casing cycled through them.

F. Challenging the reliability

of the 'match'

Both on cross-examination of the government's witness and through his own expert, the defendant presented evidence that, like field sobriety tests or handwriting analysis, toolmark analysis meets none of the *Daubert* standards of reliability. There are no meaningful and accepted validity studies in the field. The "field" has little efficacy outside of the courtroom. There are no peer reviews of it. There has been no showing of the examiner's error rate. No one can compare the opinion reached by an examiner with a standard protocol subject to validity testing since there are no recognized standards. There is no agreement as to how many similarities it takes to declare a "match" or how many differences it takes to rule it out.[48] In all of these cases, the experts make their identification based solely on a "one-on-one show-up." There is absolutely no evidence that any of these experts could pick a "match" if they were given a line-up of similar exemples and asked to determine which matched the item sought to be identified. In fact, in the case of the officer-involved shooting in Georgia, they could not.

In his classic textbook on firearms investigation, Hatcher recognizes that one must use statistical analysis and theory of probability to support a conclusion that a particular cartridge was fired through a particular firearm. After going through the probability analysis, however, Hatcher admits, "Of course, the details given in this discussion are all purely speculative for no data are available as to the exact probability of the existence of any particular mark at any definite location on a bullet."[49]

Since the publication of Hatcher's definitive text in 1935, there have been no scientifically-conducted studies that quantify to a statistically significant probability the likelihood that particular marks will identify a particular make of firearm, much less an individual firearm from a particular make. By way of comparison, DNA evidence of a "match" is only admitted along with statistical evidence of the likelihood of a DNA profile matching by coincidence.[50] Without such statistical evidence of the probability of a coincidental match, the testimony is considered meaningless.

As the U.S. District Court of Maryland found in the case of field sobriety tests, toolmark identification has achieved general acceptance without there ever having been a contested, detailed examination of the underpinnings of the methodology. General acceptance of the methodology among toolmark examiners fails to satisfy the *Daubert/Kumho Tire* tests where there is no evidence that these professionals have the expertise needed to evaluate the methods and procedures underlying the techniques. Moreover, in contrast to other forensic techniques, there is good reason why general acceptance of toolmark identification methodology in the past does not necessarily support general acceptance of that methodology now. Modern manufacturing methods have in fact minimized the toolmarks upon which toolmark analysis is based, and logic dictates that whatever efficacy these methods had in the past has been eliminated by these modern manufacturing methods.

Finally, the actual method used by examiners to declare a "match" is so lacking in scientific method that even a layperson can see its flaws. Firearms examiners are typically law enforcement officers who have learned identification "techniques" from observing other officers. They generally are not required to have any formal scientific or technical education that would enable them to conduct an experiment using scientific method or to state a conclusion to any mathematical probability. Most examiners, many of whom are state and local law enforcement agents, go through no formal training program, certification or annual testing, as do FBI-certified fingerprint examiners. The firearms examiner typically, as in the *Prochilo* case, test-fires the weapon and compares the test-cartridge to those discovered in the course of the investigation. The examiner does not fire even one other gun of the same make and model to see if the marks observed might be characteristic of the class or type of gun but not necessarily the individual gun. Nor have any systematic studies been conducted in which repeated firings are analyzed to determine what, if any, marks observed are unique to the particular gun. Where there can be no presumption of uniqueness and there are uncontroverted examples of failure of the technique, excluding this evidence pending such studies does not, as Judge Pollak found in the case of fingerprint analysis, make "the best the enemy of the good."[51] On the contrary, the method of comparison and of declaring a "match" in the case of toolmarks is both devoid of scientific method and as a factual matter wholly unreliable.

All expert testimony should be excluded, not just testimony of a 'match'

Even where it has been determined that a forensic technique lacks sufficient reliability to permit expert testimony of a positive "match," courts have next considered whether to permit experts to testify to the underlying facts of comparison from which jurors can then draw their own conclusions. As the court reasoned in *Horn*, Rules 701 and 702 of the Federal Rules of Evidence provide the answer.[52] Where such testimony concerns matters, such as handwriting or signs of intoxication, which are within the common experience of jurors and as to which lay witnesses would be permitted to give an opinion under Rule 701, comparison testimony may be appropriate. In areas outside of the common experience of laypersons, however, such as DNA comparison, enlarged fingerprints or toolmarks, any testimony whatsoever is by definition based on scientific, technical or other specialized knowledge and, if it does not meet the requirements of Rule 702/*Daubert*, must be excluded. To allow such comparison testimony while excluding the ultimate opinion would be to allow through the back door evidence that is not sufficiently reliable to enter through the front.

In *Horn*, Judge Grimm allowed the police officer to testify to his observations of the suspect's performance of the field sobriety tests and to give an opinion based on those observations as to the sobriety of the suspect. The court allowed this testimony under Rule 701 as lay opinion testimony based on the perception of the witness, not based on scientific, technical or other specialized knowledge.[53] The court ruled, however, that the officer would not be allowed to interject technical or specialized comments based on his technical training or experience, where the proffered expert testimony was inadmissible under Rule 702.[54] Similarly, several courts, while excluding from evidence the expert's ultimate conclusion that the handwriting was a "match," have admitted the expert's testimony as to similarities between the handwriting samples.[55] Noting that both lay witnesses under Rule 701 and jurors are permitted to determine authorship of handwriting based on their own comparisons, these courts were satisfied that expert testimony as to the mechanics and characteristics of handwriting would "add to the general knowledge of lay persons and assist them to make comparisons of different examples of handwriting."[56]

Where observations are not within the experience of the ordinary juror, however, any comparison testimony is necessarily based on scientific, technical or other specialized knowledge and is

therefore inadmissible if it fails to meet the requirements of *Daubert*/Rule 702. In the first *Plaza* decision, while excluding the examiner's ultimate opinion, the court would have permitted the experts to describe how the rolled and latent fingerprints at issue were obtained and similarities of and differences between the magnified images of the prints. The court reasoned that, unlike evaluation testimony which constituted an opinion subject to Rule 702, comparison testimony was purely descriptive and, therefore, not subject to *Daubert* standards.[57] Rule 702 applies to all expert testimony, however, not just an ultimate opinion or conclusion.

Moreover, the court's own summary of this "purely descriptive" testimony belies its conclusion. Since magnified fingerprints are outside the common experience of laypersons, any descriptions of them must necessarily be based on scientific, technical or other specialized knowledge. Such descriptions do not merely add to the juror's general knowledge about a matter as to which they would otherwise be permitted to reach their own conclusions based on their own observations. On the contrary, that testimony, like the ultimate opinion, is subject to the provisions of Rule 702/*Daubert* and, unless it is based on reliable methods, is inadmissable.

Even if admissible, the testimony is unduly prejudicial and must be excluded pursuant to Federal Rule of Evidence 403. Because lay jurors have no experience in their daily lives in comparing fingerprint impressions, they have no context within which to place the expert's testimony pointing out particular degrees of similarity. This is also true for comparison testimony regarding DNA strands or toolmark impressions. With no basis, either from their own experience in daily life or from admissible expert testimony, for determining how many points of comparison might justify the conclusion of a "match," the expert's testimony as to points of comparison is not only meaningless, but also unduly prejudicial. The jury will simply assume that if the court is taking up its valuable time to allow an "expert" to point out matching marks, they must be significant and, conversely, that a coincidental match is unlikely.

In rejecting any attempt to distinguish between scientific and technical evidence and its effect on the jury, the court in *Kuhmo Tire* recognized that, whether the testimony to be offered was "scientific" or "technical," the expert's testimony would rest upon an experience confessedly foreign in kind to the jury's own. Under those circumstances, the trial judge is required to assure that the specialized testimony is reliable and relevant and can help the jury evaluate that foreign experience.[58] A fact witness may testify that the suspect was blond because the jury knows from its own experience that the defendant is not the only blond in the population and, therefore, cannot be identified on the basis of that characteristic alone.

Jurors have at least seen a wide variety of handwriting and can, without expert testimony, compare handwriting samples in the context of the varieties of handwriting they come across in daily life. Jurors have no experience, however, with microscopic toolmarks on bullets, enlarged fingerprint impressions, microscopic hair comparisons or DNA strands. Without scientifically conducted tests to inform a jury of the likelihood that any particular mark or any set of marks can uniquely identify a bullet shot from a particular gun (or a fingerprint, a sample of hair or DNA), the testimony is both meaningless and misleading, and would be unduly prejudicial were it admitted. This is not a case where the ability of jurors to perform the crucial visual comparisons on their own, as in the case of handwriting, cuts against the danger of undue prejudice from the mystique attached to an expert.[59] On the contrary, where testimony wholly outside the experience of the ordinary juror fails to meet *Daubert's* standards of reliability, it must be excluded in its entirety.

Ballistics next on the firing line

Toolmark identification, like handwriting analysis and field sobriety tests, does not meet *Daubert's* requirement that expert testimony be based on valid scientific method. Moreover, there is good reason, even apart from *Daubert*, namely, modern manufacturing methods, why toolmark analysis techniques should be challenged now. It is only a matter of time before a U.S. District Court issues a decision, like *Hines* and *Horn*, excluding this testimony from trial. But until they do, don't be afraid to take this evidentiary challenge to the jury.

Notes

1. Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993).

2. Frye v. United States, 293 F. 1013 (D.C. Cir. 1923).

3. *Daubert*, 509 U.S. at 592.

4. *Id.* at 592-593.

5. Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999).

6. *Daubert*, 509 U.S. at 595.

7. Hall v. Baxter Healthcare Corp., 947 F. Supp. 1387, 1401 (D.Or. 1996) (quoted in Qwik, *Guarding the Gate: Expert Evidence Admissibility*, published in LITIGATION, a publication of the Litigation Section of the American Bar Association, Summer 1999, Vol. 25, No. 4, p. 10).

8. *Daubert*, 509 U.S. at 593-594.

9. *Kuhmo Tire*, 526 U.S. at 151.

10. *Daubert*, 509 U.S. at 591-592.

11. Daubert v. Merrill Dow Pharmaceuticals, Inc., 43 F.3d 1311, 1321 n.17 (9th Cir. 1995) (quoting *Daubert*,, 509 U.S. at 595).

12. *Id.*

13. *Id.* at 1321 and 1322 n.18.

14. Giannelli and Imwinkelried, *Scientific Evidence: The Fallout from Supreme Court's Decision in Kuhmo Tire*, CRIMINAL JUSTICE MAGAZINE, published by the ABA Criminal Justice Section, Winter 2000, Vol. 14, No. 4, p. 40.

15. United States v. Hines, 55 F. Supp. 2d 62 (D.Md. 1999).

16. *Id.* at 69.

17. *Id.*

18. *Id.* at 70 n.21 (citing United States v. Buck, 1987 WL 19300 (S.D.N.Y. 1987)).

19. United States v. Rutherford, 104 F. Supp.2d 1190 (D. Neb. 2000) (holding that handwriting analysis testimony on unique identification lacks both the validity and reliability of other forensic evidence); United States v. Van Wyk, 83 F. Supp.2d 515, 523 (D.N.J. 2000) (holding that, like handwriting analysis, text analysis is questionable because there is no known rate of error, no recognized standard, no meaningful peer review, and no system of accrediting an individual as an expert in the field). *See also* United States v. Santillan, No. CR-96-4016, 1999 WL 1201765 (N.D.Cal. Dec. 3, 1999).

20. United States v. Plaza, Nos. CR. 98-362-10 to 98-362-12, 2002 WL 27305 (E.D.Pa. January 7, 2002), *rev'd*, Nos. 98-362-10, 98-362-11, 98-362-12, 2002 WL 389163 (E.D.Pa. March 13, 2002).

21. *Id.*, 2002 WL 27305, at *18.

22. *Plaza*, 2002 WL 389163, at *11.

23. *Id.* at *20.

24. *Cf.* United States v. Havvard, 117 F. Supp. 2d 848 (S.D. Ind. 2000) (latent fingerprint identification satisfied the standard set forth in *Daubert*); United States v. Martinez-Cintron, 136 F. Supp. 2d 17 (D.P.R. 2001) (court denied defendant's motion to exclude the fingerprint identification evi-

dence and found that the latent fingerprint comparison evidence was admissible because the comparison could be tested. "[v]igorous cross-examination . . . will help reveal whether the expert has applied the relevant principles and methods to the facts or data of the case.").

25. United States v. Horn, 185 F. Supp. 2d 530 (D.Md. 2002).

26. *Id.* at 554.

27. *Id.* at 557.

28. *Id.*

29. Williamson v. Reynolds, 904 F. Supp. 1529, 1558 (E.D. Okla. 1995) *aff'd on other grounds in* Williamson v. Ward, 110 F.3d 1508 (10th Cir. 1997).

30. Williamson v. Ward, 110 F.3d 1508, 1523 (10th Cir. 1997).

31. Giannelli and Imwinkelried, *supra* note 19, at 17-18.

32. United States v. Bahena, 223 F.3d 797 (8th Cir. 2000).

33. *Id.* at 809-10.

34. Howard v. State, 701 So.2d 274 (Miss. 1997).

35. *Kuhmo Tire*, 526 U.S. at 152.

36. *Daubert*, 43 F.3d at 1318 and 1319 n.10.

37. *Id.* at 1319.

38. *Id.*

39. *Id.* at 1319 n.10.

40. Major General Julian S. Hatcher, TEXTBOOK OF FIREARMS INVESTIGATION, IDENTIFICATION AND EVIDENCE 254 and 27-28 (1935).

41. *Id.*

42. *Id.*

43. *Id.* at 288.

44. *Id.* at 238.

45. *See id.* at 27-28.

46. Major General Julian S. Hatcher et. al., FIREARMS INVESTIGATION, IDENTIFICATION AND EVIDENCE 382 (Thomas G. Samworth ed., 1957).

47. *Id.* at 118-119.

48. *Cf. Hines*, 55 F. Supp. 2d at 69.

49. Hatcher, *supra* note 43, at 287.

50. *See* REFERENCE GUIDE ON FORENSIC DNA EVIDENCE, p. 297.

51. *Plaza*, Nos. 98-362-10, 98-362-11, 98-362-12, 2002 WL 389163, at *20.

52. *Horn*, 185 F. Supp. 2d at 560.

53. *Id.* at 560-561.

54. *Id.*

55. *Hines*, 55 F. Supp. at 70. *See also* United States v. Van Wyk, 83 F. Supp. 2d 515, 522-523 (D.N.J. 2000); United States v. Santillan, No. CR-96-4016, 1999 WL 1201765 at *5 (allowing comparison testimony of handwriting samples but no opinion of authorship noting that both lay witnesses pursuant to Fed .R. Evid. 701 and jurors are permitted to determine authorship of handwriting based on their own comparisons).

56. *Hines*, 55 F. Supp. 2d at 70 (quoting United States v. Buck, 1987 WL 19300 (SDNY 1987)). *See also id.*

57. *Plaza*, Nos. CR. 98-362-10 to 98-362-12, 2002 WL 27305, at *18.

58. *Kuhmo Tire*, 526 U.S. at 149.

59. *Cf. Hines*, 55 F. Supp. 2d at 70 n.21.

Declaration of Stanley Williams
(April 6, 1984) filed as Exhibit A to
Petition for Writ of Habeas Corpus,
California Supreme Court
case number Crim 23806

MANATT, PHELPS, ROTHENBERG & TUNNEY
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
11355 WEST OLYMPIC BLVD. - LOS ANGELES, CALIFORNIA 90064
TELEPHONE (213) 312-4000

DECLARATION OF STANLEY WILLIAMS

I, Stanley Williams, hereby declare as follows:

1. I am the Appellant in this action and submit this Declaration in support of my Petition for Writ of Habeas Corpus.

2. I met George Oglesby in the Los Angeles County Jail soon after I was sent there in March, 1979. He was in a cell close to mine in an area of the jail called "high power".

3. During the time that Oglesby and I were neighbors at County jail, we talked to each other often. We could yell to one another from our cells, we spoke often during "freeway time", and we sometimes also passed notes to one another. Among other subjects, we had many conversations about the crimes I was charged with. Oglesby initiated most of the conversations we had, and repeatedly questioned me about the circumstances of the murders I was accused of committing.

4. Close to the time of trial in this case, I found out that Oglesby was a government agent and that he planned to testify against me about conversations he claimed we had while at County Jail together. At the time I was in daily contact with Oglesby and was talking freely with him, I had no idea that he was an informant for the government. During that time, Oglesby acted just like any other inmate, and won my confidence in him by always offering me his help and advice, asking me questions as if he cared about me, and generally treating me like a friend. Had I known that he was an agent, I never would have spoken to him, particularly in the open and trusting way that I did.

5. Before and during my trial, I disclosed all of the above information about my relationship with Oglesby and the nature of our conversations with my trial counsel.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 6TH day of April, 1984 at San Quentin, California.

STANLEY WILLIAMS

MANATT, PHELPS, ROTHENBERG & TUNNEY
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
11355 WEST OLYMPIC BLVD. · LOS ANGELES, CALIFORNIA 90064
TELEPHONE (213) 312-4000

Declaration of Stanley Williams
December 1, 2005 from
Petitioner's Supplemental Exhibits
filed in the Petition
for Writ of Habeas Corpus,
California Supreme Court
case number S139526

SER 342 - 343

DECLARATION OF STANLEY WILLIAMS

I, Stanley Williams, hereby declare the following:

1. I am a condemned inmate at San Quentin State Prison in San Quentin, California (Prison Number C-29300). I was convicted and sentenced to death for four murders that I did not commit. I was not present when any of these individuals was killed and I do not know who killed them. I have protested my innocence since the day I was arrested.

2. While I was a pretrial detainee at the Los Angeles County Jail from 1979 to 1981, I was forcibly drugged with some kind of powerful psychotropic medication. I was also drugged during my trial. I wrote about this involuntary drugging in my autobiography, "Blue Rage, Black Redemption." My account of being drugged is a true account of my experience. The effects of these drugs took years to wear off.

3. I did not write about my trial in my autobiography because I do not remember the trial. I do not remember the witnesses testifying against me. It was only years later while reading my trial transcripts and the briefs filed by my appellate lawyers that I learned about the evidence against me. All of the prosecution witnesses who testified, Alfred Coward, James Garrett, Ester Garrett, Samuel Coleman, and George Ogelsby lied.

3. I do remember being arrested with Samuel Coleman. I also remember Coleman being beaten in the jail. I do not remember him testifying against me. If I had been aware of what was going on in my trial, I would have informed my trial attorney Joe Ingber,

that Coleman had been severely beaten by the police before he testified against me. I would have asked Mr. Ingber to cross-examine Coleman about the beating.

4. I do remember Joe Ingber but I have only a vague recollection of conferring with him prior to my trial. I do remember telling him that I was innocent.

5. While my case was on appeal, I saw notes that jailhouse informant George Ogelsby gave to law enforcement authorities. Although these notes appear to be in my handwriting, I do not remember writing any of them. I do not remember speaking with George Ogelsby while I was incarcerated at the Los Angeles County Jail. I do not even remember what he looked like.

6. Throughout the years that my case was on appeal in both the state and federal courts, I told all my attorneys repeatedly that I was innocent. I also told them repeatedly that I had been drugged during my trial.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 1st day of December 2005, at San Quentin, California.

Stanley Williams

STANLEY WILLIAMS, Declarant

Declaration of Robert M. Martin
(November 17, 2005)

SER 344

DECLARATION OF ROBERT M. MARTIN

I, ROBERT M. MARTIN, hereby declare as follows:

1. I was the Deputy District Attorney for the County of Los Angeles assigned to prosecute Stanley Williams, Superior Court Case No. A-194636.

2. In exchange for Alfred Coward's testimony at the preliminary hearing and trial, he was offered full immunity from prosecution for his involvement in the crimes in this case.

3. I have no recollection of ever discussing Mr. Coward's citizenship with him, nor do I recall that he was not a United States citizen.

4. Deportation did not play any role in the decision to grant Mr. Coward immunity, and there was never any deal made with Mr. Coward to ensure he was not deported.

5. I played no role in retaining Samuel Coleman representation.

6. Mr. Coleman's attorney, Walter Gordon, approached me with a request for immunity on behalf of Mr. Coleman. Although I had no intention of charging Mr. Coleman with any crime in this case, I granted Mr. Coleman's request for immunity in order to secure his testimony at the preliminary hearing and at trial.

7. I have no recollection of ever speaking with Esther Garrett's attorney. At the time of Mr. Williams' trial, I did not know the identity of Mrs. Garrett's attorney.

I declare under penalty of perjury and the laws of the State of California and United States of America that the foregoing is true and correct.

Executed this 17th day of November 2005, at Tubac, Arizona.

Robert M. Martin

Declaration of David M. Furmanski (December 9, 2005)

SER 345 - 346

DECLARATION OF DAVID M. FURMANSKI

I, DAVID M. FURMANSKI, hereby declare as follows:

1. I am currently a lieutenant in the Special Enforcement Bureau of the Los Angeles County Sheriff's Department.

2. In March 1979, I was a deputy sheriff trainee for the Los Angeles County Sheriff's Department, working out of the Firestone station.

3. I was one of two arresting officers of Stanley Williams and Samuel Coleman on March 15, 1979.

4. I recall the arrest of Stanley Williams, in part, because that night I was partnered with Dennis Sterk as my training officer. Deputy Sterk was not my regular training officer.

5. I have read the chapter in Stanley Williams' book, Blue Rage, Black Redemption, entitled "The Longest Day," in which Mr. Williams describes his arrest with Samuel Coleman, and Mr. Coleman's alleged beating by Los Angeles County Sheriff's deputies at Firestone station.

6. I also have read Mr. Coleman's 1994 declaration in which he claims he was beaten while housed in a cell next to Mr. Williams.

7. In addition, I have reviewed the March 15, 1979, arrest report and booking slips that I prepared following the arrests of Mr. Coleman and Mr. Williams.

8. The chapter in Mr. Williams' book, and Mr. Coleman's 1994 declaration do not accurately describe their arrests.

9. The arrest of Mr. Williams and Mr. Coleman was executed by myself and Deputy Sterk. We were traveling together in one patrol car, and we did not call for backup units.

10. I specifically recall that there were no assisting officers because I remember being concerned because Mr. Coleman was fairly large and Mr. Williams was impressively large. Although I was about the same size as Mr.

Coleman, Deputy Sterk was only about 5'10" tall and weighed about 170 pounds. In addition, it was late at night, and the arrest occurred in a questionable area.

11. I do recall that Mr. Coleman acted somewhat strangely immediately after being handcuffed, but he then did sit on the curb and followed our instructions.

12. I also recall that Mr. Williams was compliant throughout the arrest, and the arrest was completed without incident.

13. No racial slurs or insults were used by myself or Deputy Sterk during the arrest of Mr. Williams and Mr. Coleman.

14. Mr. Williams and Mr. Coleman were transported to, and booked at, Firestone station. I was the deputy who booked both Mr. Williams and Mr. Coleman.

15. At the time of his arrest and booking, I did not know who Mr. Williams was. It was not until 9 or 10 a.m., when homicide detectives showed up, that I learned that Mr. Williams was wanted for four murders.

16. At the time of his booking, Mr. Williams provided no "AKA"s or nicknames.

17. Mr. Williams indicated that he had no tattoos, and I observed none.

18. At the time of his arrest, Mr. Williams also did not provide a driver's license or a social security number.

19. It was not until years later that I learned that Mr. Williams was the supposed leader of the Crips street gang.

I declare under penalty of perjury and the laws of the State of California and United States of America that the foregoing is true and correct.

Executed this 9th day of December 2005, at Los Angeles, California.

David M. Furmanski